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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,756	12/15/2005	Takatoshi Tsujimura	JP920010371US1	4741
32074 7590 07/09/2009 INTERNATIONAL BUSINESS MACHINES CORPORATION DEPT. 18G BLDG. 321-482 2070 ROUTE 52 HOPEWELL JUNCTION, NY 12533				
EXAMINER ARENA, ANDREW OWENS				
ART UNIT		PAPER NUMBER		
2811				
NOTIFICATION DATE		DELIVERY MODE		
07/09/2009		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

EFIPLAW@US.IBM.COM

### Office Action Summary

**Application No.**

10/528,756

**Applicant(s)**

TSUJIMURA ET AL.

**Examiner**

Andrew O. Arena

**Art Unit**

2811

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 5-7, 9 and 10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-7, 9 and 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

The arguments filed 04/07/2009 have been fully considered, those regarding rejections based solely on Yu are persuasive but moot in view of the new grounds of rejection, those regarding the combination of Akai and Yu are not persuasive.

In particular, Yu does not disclose a portion of the organic layer directly underneath the trench wall.

The arguments that "there would not be any reasonable probability of success" (pg 6 ¶3) are not convincing. The combination of references provides all the knowledge and guidance necessary. It is clear that the walls of Yu are adequate for the liquid doping performed by Yu. If there were any worry about the trench wall pattern in Akai, it is alleviated in using the method of Yu to dope Akai since one could just use the trench wall pattern material of Yu, or any other known suitable material.

### ***Claim Rejections - 35 USC § 103***

Statute 35 U.S.C. § 103(a) is the basis for obviousness rejections made herein:

Claims 1-3, 5-7, 9 and 10 are rejected under 35 U.S.C. § 103(a) as obvious in view of Akai (JP 2001-210469) and Yu (US 7,098,060).

**RE claim 1**, Yu discloses an organic light emitting diode device (col 1 ln 11-14), comprising (e.g., Fig 1E):

a substrate (10; col 4 ln 46);

a first electrode (20; col 4 ln 47) formed on the substrate;

an organic electroluminescent function layer (50, 56, 58; col 5 ln 5 & ln 20-24) formed on the substrate;

a trench wall pattern (30; col 4 ln 47) formed adjacently to the function layer; and  
a second electrode layer (60; col 5 ln 25) formed on the function layer and the trench wall pattern,

wherein a doping concentration in the function layer (56, 58) under (not above) a wall (30 between 56 and 58) forming the trench pattern is lower than in other portions of the function layer (50 is doped less than 56 and 58, col 5 ln 1-24).

Yu differs from the claimed invention only in not disclosing a portion of the function layer resides directly underneath said trench wall.

Akai is analogously directed to an organic light emitting diode and teaches a trench wall pattern (111 in ¶55, which began as 110 in ¶42) forming a pattern on a function layer (106, ¶36), such that a portion of the function layer resides directly underneath said trench wall.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made (i) said trench wall forms a pattern on said function layer, and (ii) a portion of the function layer resides directly underneath said trench wall; and; at least to use a known suitable arrangement, e.g., to ease manufacture in that etching of the function layers would not be necessary.

**RE claim 2**, Yu discloses the function layer (50, 56, 58) contains one of polymer and oligomer, each having an amine derivative structure (col 8 lns 11, 16 & 36).

**RE claim 3**, Yu as modified discloses different types of dopant are contained in areas of the function layer (col 5 In 5 & In 20-24), the areas (50, 56, 58) being adjacent to each other while being spaced said trench wall (30).

**RE claim 5**, Akai discloses a method for manufacturing an organic light emitting diode device (§8), the method (§30) comprising the steps of:

forming (Drawing 1, §31, §35) a first electrode (102) on a substrate (101);

forming (Drawing 2) an organic electroluminescent function layer (106, §36) on the electrode;

forming (Drawing 3-5) a trench pattern (111 in §55, which began as 110 in §42) on said organic electroluminescent function layer; and

forming (Drawing 6) a second electrode layer (112, §56) on the function layer and the trench pattern.

Akai differs from the claimed invention only in not disclosing performing doping of the function layer.

Akai's above-cited method creates a monochrome display (§29, §59). Akai also contemplates a full color display (§38) but does not give manufacturing details.

Yu is analogously directed to a method for manufacturing an organic light emitting diode device displaying full-color images (col 1 In 10-13). Yu discloses forming an organic electroluminescent function layer (50) including a trench pattern (30) on a first electrode (20) on a substrate (10) and further discloses the step of doping (Fig 1C) the function layer by supplying a dopant solution (52, 54) along the trench pattern (col 5 Ins 5, 12-16 & 20-24). Yu discloses several advantages (col 5 In 65 - col 6 In 65).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made that the method of Akai further include the step of performing doping for the function layer by supplying a dopant solution along the trench pattern; at least to use a known suitable method of achieving a full-color display.

**RE claim 6**, Akai discloses wherein the step of forming a trench pattern includes the steps of: forming a photoresist layer on the function layer; and patterning the photoresist layer to form the trench pattern (¶23, ¶47).

**RE claim 7**, combined Akai and Yu discloses a second function layer (104 or 105) having a composition different from a composition of the function layer (¶36), the second function layer being "along the trench pattern" in the completed device.

**RE claim 9**, Yu discloses the step of performing doping for the function layer by supplying a dopant solution includes the steps of:

supplying the dopant solution along the trench pattern (col 5 ln 12-16); and  
dispersing the dopant into the function layer (Fig 1C-1D).

Yu differs from the claimed invention only in not explicitly disclosing the manner by which said dispersing is effected.

However, heating is one of the most well known methods of dispersing, or enhancing the dispersion of, dopants, in the art.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made that said dispersing included dispersing by heating the function layer; at least to facilitate the uniform incorporation therein of the dopants.

**RE claim 10**, Yu discloses wherein the step of performing doping includes the step of supplying different types of dopant into areas of the function layer, the areas being spaced by a wall of the trench pattern (col 5 lns 5, 12-16 & 20-24).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of time extension per 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew O. Arena whose telephone number is 571-272-5976. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne A. Gurley can be reached on 571- 272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. For more info about PAIR, see <http://pair-direct.uspto.gov>. For questions PAIR access, contact the Electronic Business Center at 866-217-9197 (toll-free). For assistance from a USPTO Customer Service Rep or access to the automated info system, call 800-786-9199 or 571-272-1000.

/Andrew O. Arena/  
Examiner, Art Unit 2811  
30 June 2009

/Lynne A. Gurley/  
Supervisory Patent Examiner, Art  
Unit 2811